

CLAIMS:

1. A display device, for carrying out image display on a display panel by controlling current flowing in display elements for each pixel based on image data, comprising:

5 display setting circuitry for setting a relationship between image data and current values for current flowing in display elements in response to an input adjustment signal, to set contrast or brightness;

estimation circuitry for estimating panel current flowing in all pixels when carrying out display for the display panel based on the image data; and

10 current control circuitry for controlling actual panel current by correcting the set contrast or brightness based on the panel current estimated by the estimation means.

2. The display device of claim 1, wherein, when the panel current estimated by the estimation means does not exceed a specified set value, correction of contrast or brightness by the current control means is not effected.

3. The display device of claim 2, wherein, if the panel current estimated by the estimation means exceeds the specified set value, the current control means corrects the contrast or brightness so that actual panel current at the time the estimated panel current becomes maximum panel current coincides with the maximum panel current.

4. The display device of claim 3, wherein the current control means stores a coefficient defining a relationship between estimated panel current required in correction of contrast or brightness, and correction of contrast or brightness, and corrects the contrast or brightness using this coefficient.

5. The display device of claim 3, wherein the current control means controls contrast based on the following equation:

$$C' = C - (C + B / (k \cdot Lw0))^{-a} \cdot (Ical - Icalx) / (Imax - Icalx),$$

where C is contrast setting value, B is brightness setting value, Lw0 is maximum luminance at initial setting time (C=1, B=0), a is luminance at the time panel current becomes iMax, when displaying a totally white surface, divided by Lwo, Ical is panel current when subjecting original image

data values to linear conversion, I_{max} is maximum current flowing in the panel, I_{calx} is the I_{cal} value (can be arbitrarily set) for the point at which maximum luminance begins to lower, and k is gamma correction input data divided by luminance.

- 5 6. The display device according to claim 1, wherein the estimation means estimate panel current based on the following equation:

$$I = R_{frame}/E_r + G_{frame}/E_g + B_{frame}/E_b,$$

- where, R_{frame} is the sum total of R pixel data for one frame, G_{frame} is the sum total of G pixel data for one frame, B_{frame} is the sum total of B pixel data for one
10 frame, E_r is R luminance divided by current flowing in one R pixel, E_g is G luminance divided by current flowing in one G pixel, and E_b is B luminance divided by current flowing in one B pixel.

7. The display device according to claim 1, wherein the light emitting element is an organic EL light emitting element.

- 15 8. The display device of any one of claim 1, wherein the estimation means estimates total current based on the sum or average of image data for a single image frame or a plurality of image frames.